



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005,  
ANSI/NCSL Z540-1-1994 & ANSI/NCSL Z540.3-2006

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CALIBRATION

Valid To: May 31, 2020

Certificate Number: 1877.02

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations<sup>1, 7</sup>:

I. Dimensional

Parameter/Equipment	Range	CMC <sup>2, 8</sup> (±)	Comments
Micrometers <sup>3</sup> (Outside, Inside, Depth)	Up to 1 in (>1 to 12) in	15 µin 14 µin/in + 1 µin	Gage blocks
Length Indicators <sup>3</sup> (Drop, Test, LVDTs)	Up to 1 in (>1 to 4) in	15 µin 14 µin/in + 1 µin	Gage blocks
Height Gages <sup>3</sup>	Up to 24 in	14 µin/in + 1 µin	Gage blocks
Calipers <sup>3</sup>	Up to 12 in	14 µin/in + 1 µin	Gage blocks
Flatness	Up to 1 in Diameter	6 µin	Optical flat

II. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC <sup>2, 4, 6</sup> ( $\pm$ )	Comments
DC Voltage – Generate, Fixed Points	1 V 10 V	8.9 $\mu$ V 12 $\mu$ V	Fluke 732A
DC Voltage – Measure/Generate	Up to 200 mV (0.2 to 2) V (2 to 20) V (20 to 200) V (200 to 1050) V	5.8 $\mu$ V/V + 0.8 $\mu$ V 4.0 $\mu$ V/V + 3.8 $\mu$ V 4.0 $\mu$ V/V + 42 $\mu$ V 6.4 $\mu$ V/V + 0.4 mV 6.4 $\mu$ V/V + 4.6 mV	Fluke 8508A and 5520A
DC Current – Measure/Generate	(1 to 200) $\mu$ A (0.2 to 2) mA (2 to 20) mA (20 to 200) mA (0.2 to 2) A (2 to 20) A	14 $\mu$ A/A + 9.2 nA 14 $\mu$ A/A + 32 nA 17 $\mu$ A/A + 0.3 $\mu$ A 56 $\mu$ A/A + 5 $\mu$ A 0.022 % + 0.064 mA 0.046 % + 0.54 mA	Fluke 8508A and 5520A
DC Resistance – Generate	(0 to 10.9999) $\Omega$ (11 to 32.9999) $\Omega$ (33 to 109.9999) $\Omega$ (110 to 329.9999) $\Omega$ (0.33 to 1.099999) k $\Omega$ (1.1 to 3.299999) k $\Omega$ (3.3 to 10.99999) k $\Omega$ (11 to 32.99999) k $\Omega$ (33 to 109.9999) k $\Omega$ (110 to 329.9999) k $\Omega$ (0.33 to 1.09999) M $\Omega$ (1.1 to 3.299999) M $\Omega$ (3.3 to 10.99999) M $\Omega$ (11 to 32.99999) M $\Omega$ (33 to 109.9999) M $\Omega$ (110 to 329.9999) M $\Omega$ (330 to 1100) M $\Omega$	40 $\mu\Omega/\Omega$ + 0.001 $\Omega$ 30 $\mu\Omega/\Omega$ + 0.0018 $\Omega$ 28 $\mu\Omega/\Omega$ + 0.0024 $\Omega$ 28 $\mu\Omega/\Omega$ + 0.0043 $\Omega$ 28 $\mu\Omega/\Omega$ + 0.013 $\Omega$ 28 $\mu\Omega/\Omega$ + 0.024 $\Omega$ 28 $\mu\Omega/\Omega$ + 0.025 $\Omega$ 28 $\mu\Omega/\Omega$ + 0.25 $\Omega$ 28 $\mu\Omega/\Omega$ + 0.25 $\Omega$ 32 $\mu\Omega/\Omega$ + 2.0 $\Omega$ 32 $\mu\Omega/\Omega$ + 2.2 $\Omega$ 60 $\mu\Omega/\Omega$ + 0.039 k $\Omega$ 0.013 % + 0.063 k $\Omega$ 0.025 % + 2.5 k $\Omega$ 0.05 % + 3.0 k $\Omega$ 0.30 % + 100 k $\Omega$ 1.5 % + 500 k $\Omega$	Fluke 5520A
DC Resistance – Generate, Fixed Points	1 $\Omega$ 1 $\Omega$ 10 $\Omega$ 25 $\Omega$ 50 $\Omega$ 100 $\Omega$ 200 $\Omega$	9.0 $\mu\Omega$ 12 $\mu\Omega$ 0.12 m $\Omega$ 0.30 m $\Omega$ 0.60 m $\Omega$ 1.2 m $\Omega$ 2.4 m $\Omega$	SRL-1 Hart 3591

Parameter/Equipment	Range	CMC <sup>2,4,6</sup> ( $\pm$ )	Comments
DC Resistance – Generate, Fixed Points (cont)	300 $\Omega$ 400 $\Omega$ 10 k $\Omega$	3.6 m $\Omega$ 4.8 m $\Omega$ 0.12 $\Omega$	SRL-1 Hart 3591
DC Resistance – Measure	Up to 2 $\Omega$ (2 to 20) $\Omega$ (20 to 200) $\Omega$ 200 $\Omega$ to 2 k $\Omega$ (2 to 20) k $\Omega$ (20 to 200) k $\Omega$ 200 k $\Omega$ to 2 M $\Omega$ (2 to 20) M $\Omega$ (20 to 200) M $\Omega$ 200 M $\Omega$ to 2 G $\Omega$	20 $\mu\Omega/\Omega$ + 5.2 $\mu\Omega$ 11 $\mu\Omega/\Omega$ + 30 $\mu\Omega$ 9.2 $\mu\Omega/\Omega$ + 0.3 m $\Omega$ 9.2 $\mu\Omega/\Omega$ + 3.8 m $\Omega$ 9.2 $\mu\Omega/\Omega$ + 32 m $\Omega$ 9.2 $\mu\Omega/\Omega$ + 0.56 $\Omega$ 11 $\mu\Omega/\Omega$ + 11 $\Omega$ 24 $\mu\Omega/\Omega$ + 0.32 k $\Omega$ 0.014 % + 24 k $\Omega$ 0.18 % + 1.2 M $\Omega$	Fluke 8508A
Electrical Calibration of Thermocouple Generate and Measure –			
Type B	(600 to 800) $^{\circ}\text{C}$ (800 to 1000) $^{\circ}\text{C}$ (1000 to 1550) $^{\circ}\text{C}$ (1550 to 1820) $^{\circ}\text{C}$	0.44 $^{\circ}\text{C}$ 0.34 $^{\circ}\text{C}$ 0.30 $^{\circ}\text{C}$ 0.33 $^{\circ}\text{C}$	Fluke 5520A
Type C	(0 to 150) $^{\circ}\text{C}$ (150 to 650) $^{\circ}\text{C}$ (650 to 1000) $^{\circ}\text{C}$ (1000 to 1800) $^{\circ}\text{C}$ (1800 to 2316) $^{\circ}\text{C}$	0.30 $^{\circ}\text{C}$ 0.26 $^{\circ}\text{C}$ 0.31 $^{\circ}\text{C}$ 0.50 $^{\circ}\text{C}$ 0.84 $^{\circ}\text{C}$	
Type E	(-200 to -100) $^{\circ}\text{C}$ (-100 to -25) $^{\circ}\text{C}$ (-25 to 350) $^{\circ}\text{C}$ (350 to 650) $^{\circ}\text{C}$ (650 to 1000) $^{\circ}\text{C}$	0.50 $^{\circ}\text{C}$ 0.16 $^{\circ}\text{C}$ 0.14 $^{\circ}\text{C}$ 0.16 $^{\circ}\text{C}$ 0.21 $^{\circ}\text{C}$	
Type J	(-210 to -100) $^{\circ}\text{C}$ (-100 to -30) $^{\circ}\text{C}$ (-30 to 150) $^{\circ}\text{C}$ (150 to 760) $^{\circ}\text{C}$ (760 to 1200) $^{\circ}\text{C}$	0.27 $^{\circ}\text{C}$ 0.16 $^{\circ}\text{C}$ 0.14 $^{\circ}\text{C}$ 0.17 $^{\circ}\text{C}$ 0.23 $^{\circ}\text{C}$	
Type K	(-200 to -100) $^{\circ}\text{C}$ (-100 to -25) $^{\circ}\text{C}$ (-25 to 120) $^{\circ}\text{C}$ (120 to 1000) $^{\circ}\text{C}$ (1000 to 1372) $^{\circ}\text{C}$	0.33 $^{\circ}\text{C}$ 0.18 $^{\circ}\text{C}$ 0.16 $^{\circ}\text{C}$ 0.26 $^{\circ}\text{C}$ 0.40 $^{\circ}\text{C}$	

Parameter/Equipment	Range	CMC <sup>2,4,6</sup> (±)	Comments
Electrical Calibration of Thermocouple Generate and Measure – (cont)			
Type L	(-200 to -100) °C (-100 to 800) °C (800 to 900) °C	0.37 °C 0.26 °C 0.17 °C	Fluke 5520A
Type N	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 410) °C (410 to 1300) °C	0.40 °C 0.22 °C 0.19 °C 0.18 °C 0.27 °C	
Type R	(0 to 250) °C (250 to 400) °C (400 to 1000) °C (1000 to 1767) °C	0.57 °C 0.35 °C 0.33 °C 0.40 °C	
Type S	(0 to 250) °C (250 to 1000) °C (1000 to 1400) °C (1400 to 1767) °C	0.47 °C 0.36 °C 0.37 °C 0.46 °C	
Type T	(-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.63 °C 0.24 °C 0.16 °C 0.14 °C	
Type U	(-200 to 0) °C (0 to 600) °C	0.56 °C 0.27 °C	
Electrical Simulation of RTD Indicators <sup>3</sup> –			
Pt 385, 100 Ω	(-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C (630 to 800) °C	0.05 °C 0.05 °C 0.07 °C 0.09 °C 0.10 °C 0.12 °C 0.23 °C	Fluke 5520A

Parameter/Equipment	Range	CMC <sup>2,4,6</sup> (±)	Comments
Electrical Simulation of RTD Indicators <sup>3</sup> – (cont)			
Pt 385, 200 Ω	(-200 to -80) °C	0.04 °C	Fluke 5520A
	(-80 to 0) °C	0.04 °C	
	(0 to 100) °C	0.04 °C	
	(100 to 260) °C	0.05 °C	
	(260 to 300) °C	0.12 °C	
	(300 to 400) °C	0.13 °C	
	(400 to 600) °C	0.14 °C	
	(600 to 630) °C	0.16 °C	
Pt 385, 500 Ω	(-200 to -80) °C	0.04 °C	Fluke 5520A
	(-80 to 0) °C	0.05 °C	
	(0 to 100) °C	0.05 °C	
	(100 to 260) °C	0.06 °C	
	(260 to 300) °C	0.08 °C	
	(300 to 400) °C	0.08 °C	
	(400 to 600) °C	0.09 °C	
	(600 to 630) °C	0.11 °C	
Pt 385, 1000 Ω	(-200 to -80) °C	0.03 °C	Fluke 5520A
	(-80 to 0) °C	0.03 °C	
	(0 to 100) °C	0.04 °C	
	(100 to 260) °C	0.05 °C	
	(260 to 300) °C	0.06 °C	
	(300 to 400) °C	0.07 °C	
	(400 to 600) °C	0.07 °C	
	(600 to 630) °C	0.23 °C	
Pt 3916, 100 Ω	(-200 to -190) °C	0.25 °C	Fluke 5520A
	(-190 to -80) °C	0.04 °C	
	(-80 to 0) °C	0.05 °C	
	(0 to 100) °C	0.06 °C	
	(100 to 260) °C	0.07 °C	
	(260 to 300) °C	0.08 °C	
	(300 to 400) °C	0.09 °C	
	(400 to 600) °C	0.10 °C	
(600 to 630) °C	0.23 °C		
Pt 3926, 100 Ω	(-200 to -80) °C	0.05 °C	Fluke 5520A
	(-80 to 0) °C	0.05 °C	
	(0 to 100) °C	0.07 °C	
	(100 to 300) °C	0.09 °C	
	(300 to 400) °C	0.10 °C	
	(400 to 630) °C	0.12 °C	

Parameter/Equipment	Range	CMC <sup>2,4,6</sup> (±)	Comments
Electrical Simulation of RTD Indicators <sup>3</sup> – (cont)			
PtNi 385, 120 Ω	(-80 to 0) °C (0 to 100) °C (100 to 260) °C	0.08 °C 0.08 °C 0.14 °C	Fluke 5520A
Cu 427, 10 Ω	(-100 to 260) °C	0.30 °C	

Parameter/Range	Frequency	CMC <sup>2,4,6</sup> (±)	Comments
AC Voltage <sup>3</sup> – Generate & Measure			
Up to 200 mV	(10 to 40) Hz (40 to 100) Hz 100 Hz to 2 kHz (2 to 10) kHz (10 to 30) kHz (30 to 100) kHz	0.014 % + 23 μV 0.012 % + 15 μV 0.011 % + 14 μV 0.014 % + 15 μV 0.034 % + 25 μV 0.077 % + 60 μV	Fluke 5520A w/ 8508A
(> 0.2 to 200) V	(10 to 40) Hz (40 to 100) Hz 100 Hz to 2 kHz (2 to 10) kHz (10 to 30) kHz (30 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz	0.012 % + 0.0025 % rng 0.009 % + 0.0025 % rng 0.008 % + 0.0025 % rng 0.011 % + 0.0025 % rng 0.022 % + 0.0078 % rng 0.057 % + 0.015 % rng 0.3 % + 0.14 % rng 1.0 % + 1.0 % rng	
(> 200 to 1050) V	(10 to 40) Hz 40 Hz to 10 kHz (10 to 30) kHz (30 to 100) kHz	0.012 % + 0.052 V 0.012 % + 0.052 V 0.023 % + 0.21 V 0.058 % + 0.54 V	

Parameter/Range	Frequency	CMC <sup>2,4,6</sup> (±)	Comments
AC Current <sup>3</sup> – Generate/Measure			
Up to 20 mA	10 Hz to 1 kHz (> 1 to 5) kHz (> 5 to 10) kHz	0.030 % + 0.022 % rng 0.030 % + 0.037 % rng 0.030 % + 0.15 % rng	Fluke 5520A & 8508A
(> 20 to 200) mA	10 Hz to 1 kHz (> 1 to 5) kHz (> 5 to 10) kHz	0.029 % + 0.024 mA 0.029 % + 0.029 mA 0.029 % + 0.092 mA	
(> 0.2 to 2) A	10 Hz to 1 kHz (> 1 to 5) kHz (> 5 to 10) kHz	0.062 % + 0.34 mA 0.073 % + 0.47 mA 0.073 % + 5.2 mA	
(> 2 to 20) A	10 Hz to 2 kHz (2 to 10) kHz	0.082 % + 2.0 mA 0.25 % + 2.1 mA	
(20 to 150) A (150 to 1025) A	(45 to 65) Hz (45 to 65) Hz	0.38 % + 0.068 A 0.53 % + 0.31 A	Fluke 5520A w/ coil
(20 to 150) A (150 to 1025) A	(65 to 440) Hz (65 to 440) Hz	1 % + 0.061 A 1 % + 0.32 A	
AC Power <sup>3</sup> – Generate			
(45 to 65) Hz; PF=1	(0.11 to 0.3) mW (0.3 to 1.1) mW (1.1 to 3) mW (3 to 11) mW (11 to 30) mW (30 to 110) mW (110 to 300) mW (300 to 725) mW (0.73 to 1.5) W (1.5 to 6.77) W (6.77 to 9.18) W (9.18 to 33.66) W (33.66 to 91.8) W (92 to 337) W (337 to 918) W (0.92 to 2.24) kW (2.24 to 4.59) kW (4.59 to 20.91) kW	0.14 % 0.10 % 0.14 % 0.10 % 0.14 % 0.10 % 0.14 % 0.12 % 0.14 % 0.12 % 0.12 % 0.08 % 0.12 % 0.08 % 0.12 % 0.08 % 0.12 % 0.10 %	Fluke 5520A

Parameter/Range	Frequency	CMC <sup>2,4,6</sup> (±)	Comments
Phase Generate <sup>3</sup> –  (0 to 360)°	(1 to 65) Hz (65 to 500) Hz 500 Hz to 1 kHz (1 to 5) kHz	0.14° 0.30° 0.58° 2.9 °	Fluke 5520A
Capacitance <sup>3</sup> – Generate  (0.19 to 3.299) nF (3.3 to 10.999) nF (11 to 109.999) nF (110 to 329.99) nF (0.33 to 1.0999) µF (1.1 to 3.2999) µF (3.3 to 10.999) µF (11 to 32.999) µF (33 to 109.99) µF (110 to 329.99) µF (0.33 to 1.0999) mF (1.1 to 3.2999) mF (3.3 to 10.999) mF (11 to 32.999) mF (33 to 110) mF	10 Hz to 10 kHz (10 to 1000) Hz (10 to 1000) Hz (10 to 1000) Hz (10 to 600) Hz (10 to 300) Hz (10 to 150) Hz (10 to 120) Hz (10 to 80) Hz Up to 50 Hz Up to 20 Hz Up to 6 Hz Up to 2 Hz Up to 0.6 Hz Up to 0.2 Hz	0.52 % + 12 pF 0.26 % + 12 pF 0.26 % + 0.12 nF 0.26 % + 0.31 nF 0.26 % + 1.2 nF 0.26 % + 3.1 nF 0.26 % + 12 nF 0.42 % + 31 nF 0.46 % + 0.12 µF 0.46 % + 0.31 µF 0.46 % + 1.2 µF 0.46 % + 3.1 µF 0.46 % + 12 µF 0.78 % + 31 µF 1.2 % + 0.12 mF	Fluke 5520A

Parameter/Equipment	Range	CMC <sup>2,4,6</sup> (±)	Comments
Oscilloscopes <sup>3</sup> – Amplitude DC & AC into 50 Ω & 1 MΩ load Bandwidth	50 kHz ref 50 kHz to 100 MHz (100 to 300) MHz (300 to 600) MHz (600 to 1100) MHz	2.4 % + 0.35 mV 1.8 % + 0.12 mV 2.4 % + 0.12 mV 4.7 % + 0.12 mV 5.9 % + 0.12 mV	Fluke 5500A, SC600
Rise Time Tunnel Diode Pulser 5520A into 50 Ω	< 150 ps < 300 ps	12 ps 12 ps	
Time Markers	(> 2 to 5) s > 50 ms to 2 s > 20 to 50) ms 1 ns to 20 ms	0.59 % 0.24 % 0.0089 % 0.0003 %	



III. Fluid Quantities

Parameter/Equipment	Range	CMC <sup>2, 5, 6, 8</sup> (±)	Comments
Gas Flow	(10 to 100) sccm (100 to 1000) sccm (1 to 10) slm (10 to 50) slm	0.26 % + 0.02 sccm 0.26 % + 0.2 sccm 0.26 % + 0.002 slm 0.28% + 0.01 slm	Fluke Molbloc
Liquid Flow Meters	(0.7 to 180) GPM	1.2 %	Volumetric flow meter

IV. Mechanical

Parameter/Equipment	Range	CMC <sup>2, 6</sup> (±)	Comments
Mass – Measure			
ASTM Class 1, OIML E2	1 mg 2 mg 5 mg 10 mg 20 mg 50 mg 100 mg 200 mg 300 mg 500 mg 1 g 2 g 5 g 10 g 20 g 50 g 100 g 200 g 500 g 1 kg 2 kg 5 kg	1.7 µg 1.9 µg 2.2 µg 2.4 µg 2.5 µg 2.5 µg 2.6 µg 2.6 µg 2.8 µg 3.0 µg 6.2 µg 6.3 µg 5.5 µg 13 µg 14 µg 25 µg 46 µg 67 µg 0.19 mg 0.28 mg 0.66 mg 1.4 mg	Mettler Toledo UMX5 w/ ASTM Class 0 mass standards NISTIR 6969, Handbook 145, MGP Guide 71
ASTM Class 6, OIML M2	10 kg	4.3 mg	ASTM Class 1 weights  ASTM Class 4 weights

Parameter/Equipment	Range	CMC <sup>2, 5, 6, 8</sup> (±)	Comments
Scales and Balances	(1 to 500) mg (> 0.5 to 100) g (> 100 to 1000) g (1 to 1000) kg	0.007 mg 1.5 µg/g + 21 µg 1.7 µg/g + 9.3 µg 0.024 %	Troemner Ultra Class masses  Class F/6 weights
Pipettes	(0.1 to 1) µL (1 to 10) µL (10 to 50) µL (50 to 100) µL (100 to 500) µL (500 to 1000) µL (1 to 5) mL (5 to 10) mL	0.033 µL 0.063 µL 0.19 µL 0.33 µL 0.41 µL 1.3 µL 11 µL 49 µL	ASTM Class 1 weights
Pressure – Measure and Generate <sup>3</sup>			
Pneumatic Differential	Up to 2.5 kPa (2.5 to 25) kPa	0.25 Pa 0.0096 %	Fluke 7250LP
Pneumatic Gage	(-14.7 to 15) psi (15 to 300) psi (300 to 750) psi (750 to 3000) psi (3000 to 7500) psi (>7500 to 10 000) psi	0.012 % + 0.001 psi 0.012 % + 0.002 psi 0.012 % + 0.02 psi 0.01 % 0.01 % 0.031 %	Mensor CPC6000
Hydraulic Gage	Up to 600 psi (600 to 3000) psi  Up to 2000 psi (2000 to 10 000) psi	0.0077 % + 1.6 psi 0.23 % + 0.2 psi  0.0077 % + 2.3 psi 0.23 % + 0.2 psi	Crystal Eng. M1  Crystal Eng. XP2i
Torque Tools	4 lbf·in to 600 lbf·ft	0.26 %	Torque transducers and loader

V. Thermodynamic

Parameter/Equipment	Range	CMC <sup>2, 6, 8</sup> (±)	Comments
Infrared Measuring Equipment	(-18 to 149) °C (150 to 200) °C (>200 to 300) °C	1.4 °C 2 °C 2.2 °C	Blackbody sources
Temperature – Measuring Equipment, Fixed Points	-196 °C -38.8344 °C 0.01 °C 231.928 °C 419.527 °C	0.007 °C 0.005 °C 0.003 °C 0.007 °C 0.004 °C	Hart 1502A w/SPRT in:  Liquid N <sub>2</sub> Hg TP cell H <sub>2</sub> O TP cell Sn FP cell Zn FP cell
Temperature – Measure <sup>3</sup>	(-196 to 0) °C (0 to 420) °C (420 to 960) °C	0.008 °C 0.022 °C 0.058 °C	Hart 1590 & SPRT
Relative Humidity – Measuring Equipment	(10 to 95) % RH	0.65 % RH	Thunder 2500
Relative Humidity Measuring Equipment – Calibration of Humidity Probes <sup>3</sup>	(10 to 97.4) % RH (>90 to 95) % RH	1.4 % RH 2.4 % RH	Vaisala HMP238

VI. Time & Frequency

Parameter/Equipment	Range	CMC <sup>2, 5, 8</sup> ( $\pm$ )	Comments
Frequency – Generate	0.01 Hz to 1 kHz 1 kHz to 1100 MHz  10 MHz	2.9 $\mu$ Hz/Hz + 6 $\mu$ Hz 2.9 $\mu$ Hz/Hz  $1 \times 10^{10}$ Hz + 0.6R	Fluke 5520A
Frequency – Measure	1 Hz to 225 MHz 10 Hz to 26.5 GHz  1 mHz to 26 GHz	2.4 $\mu$ Hz/Hz + 10 $\mu$ Hz 5.0 $\mu$ Hz/Hz + 20 $\mu$ Hz  $1 \times 10^{10}$ Hz + 0.6R	HP 53132 Opt 2 EIP 548A  HP 53132A w/rubidium standard
Stopwatches <sup>3</sup> –	0.1 s to 24 hr	0.13 s	HP 53132A w/ Agilent 33220A
Digital Stopwatch/Timer	Offset per 24 hours	0.039 s/day	Witschi Qtest 6000
Tachometers <sup>3</sup>	(40 to 99 999) rpm	(0.29 + 0.00023X) rpm	Fluke 5520A; X equals measured rpm

<sup>1</sup> This laboratory offers commercial calibration services and field calibration services.

<sup>2</sup> Calibration and Measurement Capability Uncertainty (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. CMCs represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of  $k = 2$ . The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

<sup>3</sup> Field calibration service is available for this calibration and this laboratory meets A2LA R104 – *General Requirements: Accreditation of Field Testing and Field Calibration Laboratories* for these calibrations. Please note the actual measurement uncertainties achievable on a customer's site can normally be expected to be larger than the CMC uncertainty found on the A2LA Scope. Allowance must be made for aspects such as the environment at the place of calibration and for other possible adverse effects such as those caused by transportation of the calibration equipment. The usual allowance for the actual uncertainty introduced by the item being calibrated, (e.g. resolution) must also be considered and this, on its own, could result in the actual measurement uncertainty achievable on a customer's site being larger than the CMC uncertainty.

- <sup>4</sup> The stated measured values are determined using the indicated instrument (see Comments). This capability is suitable for the calibration of the devices intended to measure or generate the measured value in the ranges indicated. CMC's are expressed as either a specific value that covers the full range or as a percent or fraction of the reading plus a fixed floor specification.
- <sup>5</sup> In the statement of CMC, all percentages are percent of reading unless otherwise indicated. In the statement of CMC, *R* represent the resolution of the unit under test.
- <sup>6</sup> Uncertainty components that can be reasonably attributed to the Unit Under Test have not been utilized in the calculation of the CMC value for this measurement parameter.
- <sup>7</sup> This scope meets A2LA's *P112 Flexible Scope Policy*.
- <sup>8</sup> The type of instrument or material being calibrated is defined by the parameter. This indicates the laboratory is capable of calibrating instruments that measure or generate the values in the ranges indicated for the listed measurement parameter.



## Accredited Laboratory

A2LA has accredited

**TRESCAL, INC.**

*Boca Raton, FL*

for technical competence in the field of

**Calibration**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the requirements of ANSI/NCSLI Z540-1-1994 and the requirements of ANSI/NCSLI Z540.3-2006 and R205 – Specific Requirements: Calibration Laboratory Accreditation Program. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).



Presented 30<sup>th</sup> day of January 2019.

A blue ink signature of the Vice President of Accreditation Services.

Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 1877.02  
Valid to May 31, 2020  
Revised April 1, 2019

*For the calibrations to which this accreditation applies, please refer to the laboratory's Calibration Scope of Accreditation.*